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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/063,915	05/23/2002	Hiroshi Sakai	15574	4405

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EXAMINER

MCHENRY, KEVIN L

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 05/20/2003

27

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-4

<b>Office Action Summary</b>	Application No. 10/063,915	Applicant(s) SAKAI ET AL.	
	Examiner Kevin L McHenry	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☒ Claim(s) 1, 5 and 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
     If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \*    c) ☐ None of:  
         1. ☒ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
     \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
     a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____                                    |

### ***Oath/Declaration***

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:  
The clause regarding "willful false statements ..." required by 37 CFR 1.68 has been omitted.

The examiner notes that the first page of the declaration is listed as page "1 of 4" and that there are only two additional pages submitted for the declaration. The page numbers of the two additional pages are unknown since the top right corner of each page appears to have been cut off by a photocopying process.

### ***Claim Objections***

2. Claim 1 is objected to because of the following informalities:

In line 10 of claim 1, the language "squeegeeurges" is used. It appears that a space is needed between "squeegee" and "urges".

Appropriate correction is required.

3. Claims 5 and 6 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 5 regards the atmosphere of the apparatus of claim 4 and does not further

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limit its structure. For examination purposes the examiner interpreted claim 5 to mean "...wherein said moisture regulating means is designed to regulate moisture to a degree equal to or less than 10 g/m<sup>3</sup>".

Claim 6 regards the atmosphere being used by the apparatus of claim 4 and does not further limit its structure. For examination purposes the examiner interpreted claim 6 to mean "...wherein said atmosphere mainly comprises a nitrogen gas (N<sub>2</sub>) supplied by a gas source".

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi et al. (U.S.P. 6,036,084) in view of Amita et al. (U.S. 2001/0042779) or Paruchuri et al. (U.S.P. 6,360,939).

Yagi et al. teach a process for printing solder paste in which a solder paste is screen printed onto the lands of a board that electronic components are subsequently mounted onto. Screen printing is conducted in a chamber with a dry air atmosphere (see U.S.P. 6,036,084; particularly column 1, lines 8-28, 39-67; column 2, lines 5-13, 28-49). During screen printing a solder mask or screen is placed in position over the board and a squeegee is used to spread or roll the solder across the mask so that the

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board is coated with paste that spreads through the screen. A screen lifting means and frame are used to hold the screen in place during printing and to lift the screen when the board is replaced. Dry air is fed to the screen printing means from a dry unit that includes a dehumidifier that removes moisture from the air. Yagi et al. teach that humidity is reduced to a level of 20% or less and that nitrogen may be mixed with the dry air being supplied to the printing process (see U.S.P. 6,036,084; particularly Figures 2 and 4; column 3, lines 36-67; column 4, lines 1-5, 22-63). The examiner notes that air is mainly composed of nitrogen and that the printing process would be at room temperature.

Yagi et al. do not teach a specific solder paste or that Sn-Zn solder is used.

Amita et al. teach a lead-free solder paste that has excellent storage stability. The solder paste is Sn-Zn based (see U.S. 2001/0042779; particularly paragraphs 12, 13, and 62).

Paruchuri et al. teach a lead-free solder that is affordable and in reasonable supply for large production use. The solder can be a paste with a Sn-Zn base (see U.S.P. 6,360,939; particularly column 1, lines 13-20; column 3, lines 7-20; column 4, lines 15-21; column 6, lines 44-50; column 7, lines 1-22).

It would have been obvious to one of ordinary skill in the art at the time that the applicant's invention was made to have modified the process of Yagi et al. by the teachings of Amita et al. or Paruchuri et al. One would have been motivated to do so in order to use a solder paste that is lead-free and has excellent storage stability, as taught by Amita et al., or to use a solder paste that is lead-free, affordable, and in reasonable supply for large production use, as taught by Paruchuri et al.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tanioka et al. (U.S.P. 5,668,058) and JP 08-99402 are cited of interest for illustrating the state of the art in screen printing processes.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin L McHenry whose telephone number is (703) 305-9626. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



May 12, 2003



M. ALEXANDRA  
PRIMARY EXAMINER